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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,757	09/30/2004	Yuichi Terada	DK-US020721	8137
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EXAMINER				
CORRIGAN, JOSEPH JAMES				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
04/01/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,757

Applicant(s)

TERADA, YUICHI

Examiner

JOSEPH CORRIGAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 3/17/08

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. Claim 5, from which claim 6 depends, recites "the heat exchanger disclosed in claim 1" (claim 5, line 3). The heat exchanger in claim 1 includes the limitation "a first heat exchange unit having an approximate inverted V shape in cross section" (claim 1, line 4). Claim 6 recites "the first heat exchanger has an approximate inverted V shape in cross-section" which appears to be the same unit as recited in claim 1, and thus, does not properly further limit claim 5.

Claim 6 is objected to because of the following informalities: the recitation of "the first heat exchanger" (claim 6, line 3) is believed to be --the first heat exchange unit-- for proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

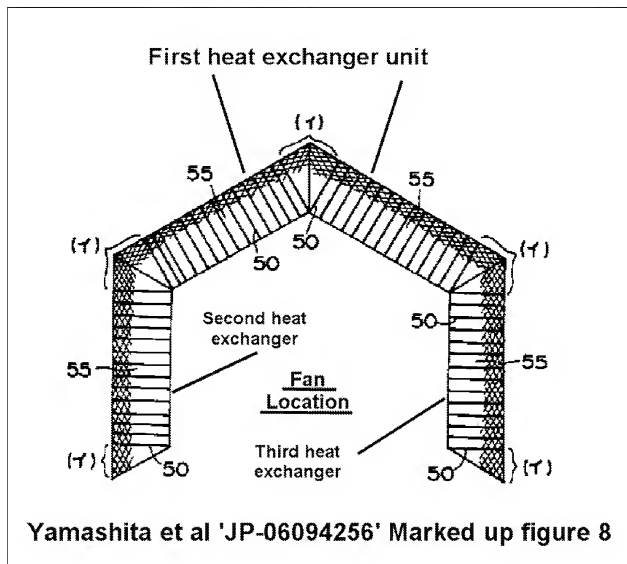
3. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamashita et al JP-06/094256.

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In re claim 1, Yamashita et al '256 discloses a heat exchanger (3) formed to be connected to a plurality of heat exchange units (55, figure 8), and which is disposed in an indoor unit of an air conditioner (figure 5) comprising: a first heat exchange unit having an approximate V shape in cross section (see marked up figure 8 below); second heat exchange unit (see marked up figure 8 below) that is connected at an angle with one end of the first heat exchange unit; a third heat exchange unit (see marked up figure 8 below) that is connected at an angle with another end of the first heat exchange unit; the second heat exchange unit (see marked up figure 8 below) and the third heat exchange unit (see marked up figure 8 below) have approximately the

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same length.



In re claim 3, Yamashita et al '256 discloses invention above and further discloses the heat exchanger (see marked up figure 8 above) is symmetrical from front to rear (open side of heat exchanger in figure 8 is considered the back side), and the second heat exchange unit (see marked up figure 8 below) and the third heat exchange unit (see marked up figure 8 below) are symmetrical from front to rear. (see marked up figure 8 below).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami et al '5,575,326' in view of Yamashita et al '256.

In re claim 1, Asami et al '326 discloses an indoor unit of an air conditioner (1, figure 4) comprising of a first heat exchange unit (8, 30, figure 4) having an approximate inverted V shape in cross-section; second heat exchange unit (28, figure 4) that is connected at an angle with one end of the first heat exchange unit (8, 30); however, Asami fails to explicitly recite that a third heat exchange unit that is connected at an angle with another end of the first heat exchange unit, the second heat exchange unit and the third heat exchange unit respectively extend downward from respective front and rear lower ends of the first heat exchange unit; and the second heat exchange unit and the third heat exchange unit have approximately the same length.

Yamashita et al '256 teach a third heat exchange unit (see marked up figure 8 above) that is connected at an angle with another end of the first heat exchange unit (see marked up figure 8 above), the second heat exchange unit (see marked up figure 8 above) and the third heat exchange unit (see marked up figure 8 above) respectively extend downward from respective front and rear lower ends of the first heat exchange

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unit; and the second heat exchange unit and the third heat exchange unit have approximately the same length (see marked up figure 8 above).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 with three-segment inverted V-shaped heat exchanger in order to advantageously provide a heat exchanger with geometric structure that surrounds the blower in such a fashion that optimal heat exchange surface area is utilized, thereby, conserving energy.

In re claims 3 and 4, Asami et al '326 disclose invention above, however, fails to explicitly recite that the first, second and third heat exchangers are assembled in such a configuration that symmetry from front to rear exists and the fan is surrounded by heat exchanger array.

Yamashita et al '256 teach an inverted V-shaped heat exchanger (figure 8) made of four segments mated together (see translation, page 6 of 9, paragraph [0041], lines 4-5) wherein the first heat exchanger (see marked up figure 8) is symmetrical from front to rear, and the second heat exchange unit (see marked up figure 8) and the third heat exchange unit (see marked up figure 8) are symmetrical from front to rear surrounding fan. (See marked up figure 8 above.) (Please note that inverted V-shaped heat exchanger (taught by Yamashita) would displace inverted V-shaped heat exchanger shown in Asami et al '326, figure 4, surrounding fan).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 with four-section inverted V-shaped heat exchanger symmetrical from front to rear in a surrounding fashion in order to

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advantageously provide maximum coverage of blower resulting in optimal heat exchange surface area, thereby, conserving energy.

6. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami et al '5,575,326' in view of Yamashita et al 'JP-06/94256' and Sato 'JP-2001/141256A'.

In re claim 5, Asami et al '326 teach the invention as recited above and further disclose that the heat exchanger covers front, upper and rear portions of the ventilation fan. However, they fail to explicitly recite that the heat exchanger is disposed so that a lower front end and a lower rear end are at a height of an apex of the ventilation fan or lower.

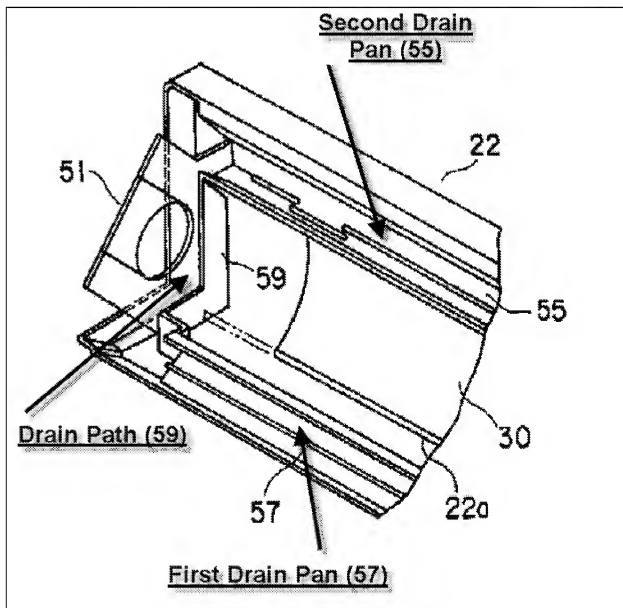
Yamashita et al '256 teaches deep inverted V-shaped heat exchanger capable of accommodating fan up into inverted V-shaped space to the extent that the lowest reaches of the second and third heat exchangers are lower than lowest point of fan.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 with deep inverted V-shaped heat exchanger fully encasing fan as taught by Yamashita et al '256 in order to advantageously provide maximum coverage of blower resulting in optimal heat exchange surface area, thereby, conserving energy.

Asami et al '326 in view of Yamashita et al '256 further fail to disclose a first drain pan that is disposed below the lower front end of the heat exchanger; a second drain pan that is disposed below the lower rear end of the heat exchanger a drain path through which drain water discharged from the first drain pan and the second drain pan

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passes; the first drain pan and the second drain pan are disposed at a same approximate height.



Sato JP-2001/141256A Marked up figure 5B

Sato et al '256 discloses a first drain pan (57, marked up figure 5B above) that is disposed below the lower front end of the heat exchanger (Yamashita); a second drain

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pan (55, marked up figure 5B above) that is disposed below the lower rear end of the heat exchanger (56, marked up figure 5 B above); a drain path (59, marked up figure 5B above) through which drain water discharged from the first drain pan (57) and the second drain pan (55) passes.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 as modified by Yamashita et al '256 with Sato et al '256 integral drain assembly below the first and second heat exchangers in order to advantageously position drip tray below condensate collecting heat exchanger array preventing the water from damaging to the living space, thereby, saving the cost of floor repairs.

Sato, however, fails to explicitly disclose the first drain pan and the second drain pan are disposed at a same approximate height.

It would have been obvious though to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 as modified by Yamashita et al '256 by positioning drain pan assembly level to the lower reaches of first and second heat exchangers (which are parallel) in order to advantageously position drip tray below condensing heat exchanger array, preventing the dripping of condensate and avoiding water damaging to the living space, thereby, saving the cost of floor repairs.

In re claim 6, Asami et al '326, modified by Yamashita et al '256 and Sato et al '256 disclose invention above; however, fail to explicitly recite a first heat exchanger having an approximate inverted V shape in cross-section.

Yamashita et al '256 teaches a first heat exchanger having an inverted V-shaped cross section, (See marked up figure 8 above).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 as modified by Yamashita et al '256 and Sato et al '256 with heat exchanger having an inverted V-shaped cross section as taught by Yamashita et al '256 in order to advantageously provide maximum coverage of blower resulting in optimal heat exchange surface area, thereby, conserving energy.

In re claim 7, Asami et al '326 as modified by Yamashita et al '256 and Sat et al '256 disclose invention above, however, fail to explicitly recite that the lower front end and the lower rear end of the heat exchanger are positioned at a same approximate height.

Yamashita et al '256 teaches incorporation of a deep inverted V-shaped heat exchanger, having symmetry about the vertical axis, where a lower front end and a lower rear end of the heat exchanger are positioned at a same approximate height. (See figure 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 as modified by Yamashita et al '256 and Sato et al '256 with a heat exchanger having an inverted V-shaped cross section having both its lowest ends equal in height as taught by Yamashita et al '256 in order to advantageously provide maximum coverage of blower resulting in optimal heat exchange surface area, thereby, conserving energy.

In re claim 8, Asami et al '326 as modified by Yamashita et al '256 and Sato et al '256 disclose invention above, however, fails to explicitly recite that the heat exchanger has a shape that is symmetrical from front to rear.

Yamashita et al '256 teaches incorporation of a deep inverted V-shaped heat exchanger, having symmetry about the vertical axis symmetrical from front to rear. (See figure 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Asami et al '326 as modified by Yamashita et al '256 and Sato et al '256 with a heat exchanger having an inverted V-shaped cross section symmetrical from front to rear in order to advantageously provide maximum coverage of blower resulting in optimal heat exchange surface area, thereby, conserving energy.

Response to Arguments

7. Applicant's arguments filed 12/17/07 have been fully considered but they are not persuasive for the following reasons:

- Re amended claim 1 limitation, applicant argues that Yamashita et al '256 fails to disclose an inverted V shaped heat exchanger with a second and third component that connect to the lower front and back ends and further argues that the prior art reference teaches a single heat exchanger unit that has been bent or shaped into curved or multisided form. The Examiner respectfully disagrees. The claims merely call for three heat exchangers to be connected in the shape of an inverted V. It does not recite that they have to be three separate and distinct

members. The Yamashita et al. heat exchanger has three heat exchangers connected together. Further the claim does not preclude the use of a heat exchanger made from "four pieces" as described in aforementioned reference translation, page 6 of 9, paragraph0041], lines 4-7

- Re amended claim 1 limitation, applicant argues that there is no suggestion or motivation for combining Yamashita et al and Asami et al the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, modifying Asami with Yamashita and Sato is merely interchanging similar functioning elements and reasonable changes foreseeable by one skilled in the art to gain a specific attribute.
- Re claims 4 and 5, applicant argues the lack of motivation in Ikeda et al. combinations. It should be noted that Ikeda et al. reference has been withdrawn from further prosecution silencing applicant's arguments regarding its disclosure.
- Re claim 5, applicant argues that Sato invention relates to a single heat exchanger. The examiner respectfully disagrees. The claim merely calls for a drip pan configured to be disposed below the front and rear end sections of the heat exchanger with a drain path to discharge the condensate drip. The Sato drip pan

component of an indoor air conditioning unit as featured rests below an inverted "V-shaped" style heat exchanger including a drain path collection and disposal segment. (See figure 2 of Sato.)

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph J. Corrigan whose telephone number is 571-270-3213. The examiner can normally be reached on m-f 7:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on (571) 272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph Corrigan/ Examiner
Art Unit 3744
3/09/08

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744